



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/652,248 | 08/29/2003 | Douglas Nelson | 1-16150 | 1864 |

7590 11/06/2006

MARSHALL & MELHORN, LLC
4 Seagate
8th Floor
Toledo, OH 43604

EXAMINER

DEHGHAN, QUEENIE S

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| | 1731 |

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|---------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/652,248 | NELSON ET AL. |
| | Examiner | Art Unit |
| | Queenie Dehghan | 1731 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 06 September 2006.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,3-9 and 13-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,3-9 and 13-24 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 16, 18, 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Dick et al. (5,431,707). Regarding claim 16, Dick et al. disclose a process for depositing a silica coating upon a heated glass surface (col. 1 lines 50-51, 29, 61) by premixing and directing a precursor mixture of silane, oxygen, ammonia, and an inert carrier gas and reacting the mixture at the surface of the glass substrate (col. 1 lines 34-38, 49-54). Dick et al. have also disclosed that the coating deposited is a silicon base layer (col. 2 lines 2-3), which is also interpreted to be equivalent to a silica coating. Regarding claim 18, Dick et al. preferably use monosilane as the silane precursor (col. 2 lines 4-5). Regarding claim 21, Dick et al. disclose forming a homogenous silicon layer and indicate essentially no nitrogen in the silica layer (col. 2 lines 2-3, 12-16). Regarding claim 22, Dick et al. disclose premixing the precursors, including the inert gas prior to directing the precursor mixture along the surface of the glass (col. 1 lines 52-55). Regarding claim 23, Dick et al. disclose using nitrogen as the carrier gas (col. 1 lines 66-67).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-9, 13-14, and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soubeyrand (5,798,142) in view of George et al. (6,818,250) and Dick et al. (5,431,707). Regarding claims 1-5, 7-8, 16-20, and 22-23, Soubeyrand discloses a process comprising providing a heated glass substrate having a surface for depositing a coating, forming a precursor mixture comprising a ethylene, monosilane, oxygen and nitrogen toward and then directing the precursor mixture along the surface to be coated, and reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate (abstract, col. 2 lines 24-57). However, Soubeyrand fails to disclose the use of ammonia as one of the precursors. George et al. teach a

vapor deposition process for coating glass with a silica layer comprising ammonia (col. 1 lines 25-65). George et al. further teach that ammonia is preferred on the basis of catalytic activity and ease of use (col. 3 lines 37-39). Dick et al. also teach the use of ammonia in a precursor mixture comprising monosilane, oxygen, and nitrogen, for the coating of a heated glass surface. Dick et al. also mention using ammonia to ensure a dense and homogenous silicon base layer (col. 1 line 28 to col. 2 line 7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize ammonia in the process of Soubeyrand because of its catalytic nature for attaching silica layers on silica substrates and for its role in contributing to the thickness of the silica layer formed, as taught by George et al.

5. Regarding claims 6 and 21, Dick et al. disclose forming a homogenous silicon layer and indicate essentially no nitrogen in the silica layer (col. 2 lines 2-3, 12-16). George et al. also teach of a resultant coating on the glass substrate with no nitrogen content (col. 6 lines 11-14, col. 9 lines 12-15, col. 11 lines 11-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have no nitrogen in the coating layer on the glass substrate of Soubeyrand to prevent the poison of the SiO_2 surface and degradation of the SiO_2 CVD reaction efficiency, as taught by George et al.

6. Regarding claims 9, 13, and 24 Soubeyrand teaches a silane concentration of 1.0%, oxygen concentration of 5% and an ethylene to silane ratio of 6 to 1 in experiment no. 2 in Table I. With 1% silane, as disclosed by Soubeyrand, the ethylene concentration would be 6-9%. However, Soubeyrand fails to disclose an ammonia

concentration. Dick et al. also disclose a similar precursor mixture containing ammonia, comprising, 1% silane, 4 % oxygen, 50% ammonia, and the balance the inert carrier gas (col. 2 line 46). George et al. do not specifically teach a concentration of ammonia in percentages, but do teach controlling the pressure of ammonia use during the coating of the glass substrate and how it contributes to the thickness of the silica film formed (col. 6 line 30 to col. 7 line 47). Although the ammonia concentrations of Dick et al. or George et al. are not 15%, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the concentration of the ammonia gas in the precursor mixture of Soubeyrand, given the same precursor materials are used and to achieve an optimum thickness of the silica layer, as taught by George et al.

7. Regarding claim 14, Soubeyrand discloses premixing the precursor materials to form a precursor mixture before directing the mixture (col. 2 lines 35-38). Dick et al. also disclose a similar step with the precursor materials (col. 1 lines 52-55).

8. Regarding claim 15, Soubeyrand discloses cooling the coated glass to ambient temperature in a cooling section (22) following deposition (68) (col. 3 lines 43-45, col. 1 lines 35-36).

9. Claims 17, 19, 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dick et al. (5,431,707), as applied to claim 16 above, in view of Soubeyrand (5,798,142). Regarding claims 17, 19, and 20, Dick et al. disclose a precursor mixture comprising silane, ammonia, oxygen and a carrier gas, but do not provide for an optional radical scavenger. Soubeyrand teaches using a radical scavenger such as propylene or ethylene in a precursor mixture (col. 2 lines 35-37, 53-

56, col. 4 lines 50-51) for depositing a silica layer on a hot glass substrate (col. 2 lines 25-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a radical scavenger such as ethylene in the precursor mixture of Dick et al. in order to allow for the silane to be premixed with oxygen without undergoing premature combustion, as taught by Soubeyrand (col. 2 lines 39-41).

10. Regarding claim 9, Dick et al. disclose a precursor mixture with 1% silane, 4 % oxygen, 50% ammonia, and the balance the inert carrier gas (col. 2 line 46), but do not disclose a concentration of ethylene. Soubeyrand teaches a silane concentration of 1.0%, oxygen concentration of 5% and an ethylene to silane ratio of 6 to 1 in experiment no. 2 in Table I. With 1% silane, as disclosed by Dick et al., the ethylene concentration would be 6-9%. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the ethylene concentration of Soubeyrand in the precursor mixture of Dick et al. in order to achieve an optimum thickness of the silica layer, as taught by Soubeyrand.

Response to Arguments

11. Applicant's arguments filed September 6, 2006 have been fully considered but they are not persuasive. The Examiner acknowledges the summary of the Dick et al. reference presented by the applicant and does not see how those points clarify the not obvious argument presented in paragraph 1.

12. Furthermore, the prior art of Soubeyrand teaches the use of ethylene to allow for silane to be premixed with oxygen without undergoing premature combustion, which is a similar reason provided for by the applicant on page 2 of the disclosure, and does perhaps perform the unexpected results suggested by the applicant. Nonetheless, it is obvious to used ethylene in the precursor mixture as demonstrated by Soubeyrand.

13. In regards to the applicant's argument regarding the nitrogen deposited in the layer, the prior art of Dick et al. do disclose a layer without nitrogen, as indicated by calling the layer a silicon layer, and not a silica oxy-nitride layer. The Examiner is unclear as to why a silica oxy-nitride coating was discussed. Furthermore, the argument is moot in view of the new ground(s) of rejection based on George et al.

14. In response to applicant's amendments, the recitation "in an on-line float glass production process" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

15. Applicant's arguments with respect to claim 16 have been considered but are not persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., ambient atmosphere) are not recited in the rejected claim(s). It is unclear what

specific atmosphere exists for a float glass process and also a specific atmosphere has not been recited in the claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Queenie Dehghan whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Q Dehghan

Dionne Walls Mays
DIONNE A. WALLS MAYS
PRIMARY EXAMINER